a second step for calculating the motion vectors of a pixel in said interframe predicted image at coordinates (x+w, y+w) by performing bilinear interpolation/extrapolation on the motion vectors of the four representative points of an image where the pixel sampling interval in both horizontal and vertical directions is 1 and horizontal and vertical coordinates of sampling points are obtained by adding w to integers (where w=wn/wd, wn is a non-negative integer, wd is a hw power of 2, hw is a non-negative integer and wn<wd), where said second step comprises:

B1 cont

C1 cont'd

a third step for calculating the horizontal and vertical components of motion vectors at the coordinates (i, y+w) as numerical values which are respectively integral multiples of 1/z (where z is the power of 2, and hz is a non-negative integer) by linear interpolation/extrapolation of the motion vectors of the representative points at the coordinates (i, j), (i, j+q), and for calculating the horizontal and vertical components of the motion vectors at the coordinates (i+p, y+w) as values which are respectively integral multiples of 1/z (where z is the hz power of 2, and hz is a non-negative integer) by linear interpolation/extrapolation of the motion vectors of the representative points at coordinates (i+p, j), (i+p, j+q),

a fourth step for calculating the horizontal and vertical components of the motion vectors of the pixel at the coordinates (x+w, y+w) as values which are respectively integral multiples of 1/m (where m is the hm power of 2, and hm is a non-negative integer) found by linear interpolation/extrapolation of the

two motion vectors at the coordinates (i, y+w), (i+p, y+w); and

a fifth step of calculating the pixel value of said pixel in said interframe predicted image of the coordinates (x+w, y+w) using said reference image and the motion vector calculated in said fourth step.

2. (Twice Amended) A method of synthesizing an interframe predicted image of a current frame from a reference image comprising:

a first step for calculating the values of motion vectors between said interframe predicted image and said reference image for four representative points at coordinates (i,j), (i+p, j), (i, j+q) (i+p, j+q) of said interframe predicted image (where i, j, p, q are integers, the horizontal and vertical components of the motion vectors of the representatives points taking the values of integral multiples of 1/k where k is the hk of power 2, and hk is a non-negative integer),

B1 cont

C' cont'd

a second step for calculating the motion vectors of a pixel in said interframe predicted image at coordinates (x+w, y+w) by performing bilinear interpolation/extrapolation on the motion vectors of four representative points of an image where the pixel sampling interval in both horizontal and vertical directions is 1 and horizontal and vertical coordinates of sampling points are obtained by adding w to integers (where w=wn/wd, wn is a non-negative integer, wd is a hw power of 2, hw is a non-negative integer and wn<wd), where the second step comprises:

a third step for calculating the horizontal and vertical components of motion vectors at the coordinates (x+w, j) as numerical values which are respectively integral multiples of 1/z (where z is the hz power of 2, and hz is a non-negative integer) by linear interpolation/extrapolation of the motion vectors of the representative points at the coordinates (i, j), (i+p, j), and for calculating the horizontal and vertical components of the motion vectors at the coordinates (x+w, j+q) as values which are respectively integral multiples of liz (where z is the hz power of 2, and hz is a non-negative integer) by linear interpolation/extrapolation of the motion vectors of the representative points at coordinates (i, j+q), i+p, j+q),

B1 cont C1 contd

a fourth step for calculating the horizontal and vertical components of the motion vectors of the pixel at the coordinates (x+w, y+w) as values which are respectively integral multiples of 1/m (where m is the hm of power 2, and hm is a non-negative integer), found by linear interpolation/extrapolation of the two motion vectors at the coordinates (x+w, j), (x+w, j+q); and

a fifth step of calculating the pixel value of said pixel in said interframe predicted image of the coordinates (x+w, y+w) using said reference image and the motion vector calculated in said fourth step.

3. (Twice Amended) A method of synthesizing an interframe prediction image according to Claim 1, wherein, when the motion vectors of a pixel at the coordinates (x+w, y+w) are found using (u0, v0), (u1, v1), (u2, v2), (u3, v3), which are the horizontal and vertical components of the motion vectors

of the representative points at the coordinates (i,j), (i+p, j), (i, j+q), (i+p, j+q) multiplied by k, (uL(y+w), vL(y+w)) which are the horizontal and vertical components of the motion vectors at a point having the coordinates (i, y+w) multiplied by z, are found by calculating:

$$uL\ (y+w) = (\ (\ (q\cdot wd - (y\text{-}j)\cdot wd\text{-}wn)\ u0 + ((y\text{-}j)\cdot wd + wn)\ u2)z)////(q\cdot k\cdot wd),$$
$$vL(y+w)=(((q\cdot wd\text{-}(y\text{-}j)\cdot wd\text{-}wn)\ v0+((y\text{-}j)\cdot wd+wn)\ v2)\ z)////(q\cdot k\cdot wd)$$

(where [////]is a division wherein the computation result is rounded to the nearest integer when the result of an ordinary division is not an integer, and the order of computational priority is equivalent to multiplication and division),

(uR(y+w), vR(y+w)) which are the horizontal and vertical components of the motion vector at a point having the coordinates (i+p, y+w) multiplied by z, are found by calculating:

$$uR(y+w)=(((q\cdot wd\text{-}(y\text{-}j)\cdot wd\text{-}wn)\ u1 + ((y\text{-}j)\cdot wd+wn)\ u3)\ z)\ ////\ (q\cdot k\cdot wd)$$
$$vR\ (y+w)=(((q\cdot wd\text{-}(y\text{-}i)\cdot wd\text{-}wn)\ v1 + ((y\text{-}j)\cdot wd+wn)v3)z)////(q\cdot k\cdot wd),\text{ and}$$

(u(x+w), y+w), v(x+w, y+w)) which are the horizontal and vertical components of the motion vector of a pixel at the coordinates (x+w, y+w) multiplied by m, are found by calculating:

$$u(x+w,\ y+w)=(((p\cdot wd\text{-}(x\text{-}i)\cdot wd\text{-}wn)\ uL\ (y+w)+((x\text{-}i)\cdot wd+wn)\ uR(y+w))m)//(p\cdot z\cdot wd)$$
$$v(x+w,\ y+w)=(((p\cdot wd\text{-}(x\text{-}i)\cdot wd\text{-}wn)\ vL\ (y+w) + ((x\text{-}i)\cdot wd+wn)vR\ (y+w))m)//(p\cdot z\cdot wd)$$

(where [//]is a division wherein the computation result is rounded to the nearest integer when the result of an ordinary division is not an integer, and the order of priority is equivalent to multiplication and division).

B1 cont

C' contd

4. (Twice Amended) A method of synthesizing an interframe predicted image according to claim 2, wherein, when the motion vectors of a pixel at the coordinates (x+w, y+w) are found using (u0, v0), (u1, v1), (u2, v2), (u3, v3), which are the horizontal and vertical components of the motion vectors of the representative points at the coordinates (i, j), (i+p, j), (i, j+q), (i+p, j+q) multiplied by k,

(uT(x+w), vT(x+w)), which are the horizontal and vertical components of the motion vectors at a point having the coordinates (x+w, j) multiplied by z, are found by calculating:

B/ cont

C1 contd

uT(x+w)=(((p·wd-(x-i)·wd-wn) u0+((x-i)·wd+wn)u1)z////(p·k·d),
vT (x+w)=(((p·wd-(x-i)·wd-wn) v0+((x-i)·wd+wn)v1)z)////(p·k·wd)

(where [////] is a division wherein the computation result is rounded to the nearest integer when the result of an ordinary division is not an integer, and the order of computational priority is equivalent to multiplication and division),

(uB(y+w), vB(y+w)) which are the horizontal and vertical components of the motion vectors at a point having the coordinates (x+w, j+p) multiplied by z, are found by calculating:

uB(x+w)=(((p·wd-(x-i)·wd-wn)u2+((x-i)·wd+wn)u3)z)////(p·k·wd),

vB(x+w)=(((p·wd-(x-i)·wd- wn)v2+((x-i)·wd+wn)v3)z)////(p·k·wd), and

B1 concl.

C1 concl.

(u(x+w), y+w), v(x+w, y+w)) which are the horizontal and vertical components of the motion vectors of a pixel at the coordinates (x+w, y+w) multiplied by m, are found by calculating:

u (x+w, y+w)=(((q·wd-(y-j)·wd-wn)uT(x+w)+((y-j)·wd+wn)uB(x+w))m)//(q·z·wd)
v(x+w, y+w)+(((q·wd-(y-j)·wd-wn)vT(x+w)+ ((y-j)·wd+wn)vB(x+w))m)//q·z·wd)

(where [//] is a division wherein the computation result is rounded to the nearest integer when the result of an ordinary division is not an integer, and the order of priority is equivalent to multiplication and by division).

Sub C2

22. (Twice Amended) A method of synthesizing an interframe predicted images according to Claim 1, wherein,

when the number of pixels in the horizontal and vertical directions of the image is respectively r and s (wherein r and s are positive integers), and the pixels of the image lie in a range wherein the horizontal coordinate is from 0 to less than r and the vertical coordinate is from 0 to less than s, (u0, v0), (u1, v1), (u2, v2), (u3, v3) which is expressed by

B2 cont

u' (x, y)=(((s·cd-cn-y·cd)((r·cd-cn-x·cd)u00 + (x·cd+cn)u01 + (y·cd+cn) ((r·cd-cn-x·cd)u02+(x·cd-cn)u03))k)///(r·s·n·cd),
v'(x, y)=(((s·cd-cn-y·cd)((r·cd-cn-x·cd)v00 +(x·cd+cn)v01)+ (y·cd+cn) ((r·cd-cn-x·cd)v02+(x·cd+cn)v03))k)///(r·s·n·cd),

u0=u' (i, j)
v0=v' (i, j)
u1=u' (i+p, j)
t1=v' (i+p, j)

C2
concl

B2
contd

u2=u' (i, j+q)
u2=v' (i, j+q)
u3=u' (i+p, j+q)
u3=v' (i+p, j+q)

(where is a division wherein the computation result is rounded to the nearest integer when the result of an ordinary division is not an integer, and the order of priority is equivalent to multiplication and division), are used as the k times horizontal and vertical components of motion vectors of representative points (i,j), (j+p, j), (i, j+q), (i+p, j+q), by using (u00, v00), (u01, v01), (u02, v02), (u03, v03) (where u00, v00, u01, v01, u02, v02, u03, v03 are integers), which are n times (where n is a positive integer) motion vectors at the corners of an image situated at the coordinates (-c, -c), (r-c, -c), (-c, s-c), (r-c, s-c) (where c=cn/cd, cn is a non-negative integer, cd is a positive integer and cn<cd), whereof the horizontal and vertical components take the values of integral multiples of 1/n.